

What is claimed is:

1. A system based on a storage array network (SAN), in which a plurality of hosts share a large network storage, wherein an original mapping table and a snapshot mapping table are stored in the same disk at a layout of a disk configuring a logical volume in the network storage, a snapshot volume is added, and a data block is allocated on the same disk if a copy-on-write (COW) operation is carried out.

2. The system according to claim 1, wherein a mapping entry of the original mapping table includes a physical data block information and a snapshot status information.

10

3. The system according to claim 2, wherein the snapshot status information of the mapping entry is a snapshot status bit (SSB) and a first allocation bit (FAB).

4. A method of creating a snapshot for on-line backup in a network storage based on a storage area network (SAN), the method comprising the steps of:

15

changing an volume operation mode of all nodes, in which a mapping server exists, into a snapshot create mode;

locking a mapping block by increasing a value of the mapping block by one;

if the mapping block is not locked, increasing a value of a copy-completed block by

20 one;

unlocking the mapping block; and

if the copy of all the mapping blocks is completed, generating a volume configuration information for the snapshot at an original volume.

5. A method of destroying a snapshot for on-line backup in a network storage based on a storage area network (SAN), the method comprising the steps of:

25

changing an volume operation mode of all nodes, in which a mapping server exists,
into a snapshot destroy mode;

locking a mapping block by increasing a value of the mapping block by one;

determine whether or not a copy-on-write (COW) operation is carried out to a data
5 block, which is indicated by a mapping entry, by using a first allocation bit (FAB) and a
snapshot status bit (SSB);

if the COW operation is carried out, initializing the FAB and the SSB, and reflecting a
changing of the mapping block in a disk;

unlocking the mapping block; and

10 if an initialization to all the mapping blocks is completed, destroying a snapshot
volume.

6. A method of performing a write operation to a data block of a volume in a
network storage based on a storage area network (SAN), the method comprising the steps of:

15 determining whether a snapshot exists or not and performing a mapping operation;

searching a position of a mapping block, in which a mapping entry of a logical data
block being an object of a current write operation exists, and a position of the mapping entry;

reading out the mapping block from a disk and obtaining a value of the desired
mapping entry;

20 checking a value of a first allocation bit (FAB) of the mapping entry to determine
whether a data block is first allocated and used after creating the snapshot;

if the value of the FAB is zero and a value of the mapping entry is an initial value,
allocating a new block, recording data contents in a copy disk, changing the value of the FAB
into one, and reflecting an original mapping block in a disk;

25 if the data block is allocated before the snapshot, determining whether the COW
operation is carried out by using a value of a snapshot status bit (SSB); and

if the COW operation whose value of the SSB is zero is not carried out, performing the COW operation, changing the value of the SSB of the current snapshot into one, and recording the original mapping block in the disk.